

REMARKS

Applicants thank the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this Response.

Status Of The Claims

Claims 1-19, 22-29 and 31-36 are pending in the application. The Examiner has withdrawn claims 27-34 from consideration.

Rejections Under 35 U.S.C. §103(a) Based On Asanuma

Claims 1-19, 22-26 and 35-36 are rejected under 35 U.S.C. §103(a) as being obvious over Asanuma (U.S. Patent 5,478,646) in view of Gupta (U.S. Patent 6,177,191) and Schmalz (U.S. Patent 4,938,832). Claims 1-19, 22-26 and 35-36 are rejected under 35 U.S.C. §103(a) as being obvious over Asanuma in view of Evans (U.S. Patent 6,171,515). Applicants traverse.

The Present Invention And Its Advantages

The present invention pertains to novel non-woven materials made from polyolefin fibers and which have bulk and resilience comparable to polyester fibers. The inventive non-woven materials have low fiber friction and a spin finish based upon an emulsion of polysiloxanes. In producing the invention, the inventors have surprisingly found that high fiber bulk does not necessarily correspond to high non-woven bulk.

The present invention has many embodiments, and a typical embodiment can be found in claim 1:

1. A fibre comprising polyolefin polymer, said fibre having the features:
 - i) a fibre/fibre friction of no more than 600 g;
 - ii) a spin finish consisting essentially of an aqueous emulsion of polysiloxanes, with at least 25% of the active content being polysiloxanes; and
 - iii) a fibre crystallinity of at least 50%.

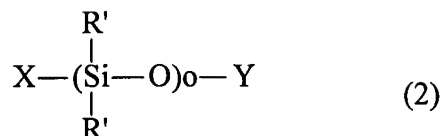
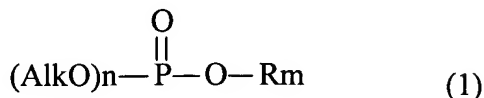
Distinctions Of The Invention Over Asanuma And The Secondary References

Asanuma, Gupta And Schmalz

Asanuma pertains to polypropylene fiber formed from two kinds of polypropylenes having a syndiotactic pentad fraction of 0.7 or more. The Examiner considers the polypropylene fibers of Asanuma to have a fiber crystallinity of at least 50%. At page 5 of the Office Action of October 5, 2004, the Examiner admits that Asanuma fails to teach the application of a spin finish. The Examiner then turns to Gupta.

Distinctions of the present invention over Gupta were discussed at pages 11-13 of the Amendment filed January 5, 2005. As discussed previously, Gupta pertains to a polyolefin fiber having an internal polysiloxane finish providing improved hydrophobicity. The Examiner contends that Gupta further teaches that the polyolefin fibers can have an applied finish, such as the spin finish discussed by Schmalz.

Schmalz pertains to a spin finish formed from an antistatic agent, a neutralized phosphoric acid ester of formula (1) and a polysiloxane of formula (2):



The Examiner contends that the finish of Schmalz contains at least 25% polysiloxane as active content and that this polysiloxane content would result in a fiber/fiber friction within the range of claim 1 of the present invention.

However, one of ordinary skill in the art would know that antistatic agents increase the fiber/fiber friction. It is further known in the art that antistatic agents generally increase the fiber/fiber friction when applied to textile fibers. Therefore, any friction lowering effect that might be achieved with the polysiloxane of the finish according to Schmalz is countered by the friction increasing effect of the phosphoric acid ester also present in the spin finish. It is therefore very unlikely that polyolefin fibers with a spin finish according to Schmalz have a fiber/fiber friction falling within the less than the about 600 g range set forth in claim 1 of the present invention.

The composition of Schmalz is allegedly advantageous because of its ability to retain the hydrophobicity when applied to hydrophobic fibers. The ability of the spin finish of Schmalz to balance the lubricity of the silicone while retaining hydrophobicity is the reason why Gupta refers to it as a possible and useful finish

to the internally lubricated fibers of Gupta (see Gupta at column 1, line 59 to column 2, line 29).

Gupta further states at column 1, lines 47-50: "Another problem in using topically applied silicon fluids is that a certain amount of necessary friction is lost because of the lubricity of the silicone fluid." Gupta at column 2, lines 14-16 also states: "Also, a severe reduction in fiber friction (from over-application of silicone) can result in various processing problems, including reduced line speeds."

Clearly, a low fiber/fiber friction, such as a fiber friction of not more than 600 g (claim 1 of the present invention) is undesirable in view of Gupta. As a result, Gupta teaches away from the present invention. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). A *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

This further substantiates the view that a person of ordinary skill in the art would not consider the spin finish of Schmalz as having a fiber/fiber friction of no more than 600 g.

One having ordinary skill in the art would thus not be motivated by the combination of Asanuma, Gupta and Schmalz to produce the present invention

as embodied in claim 1. A *prima facie* case of obviousness has not been made.

Claims depending on claim 1 are patentable for at least the above reasons.

Asunuma and Evans

The Examiner alternately combines Asunuma with Evans to allege obviousness. The Examiner contends that Evans teaches a fiber treatment composition containing siloxanes that can be applied to fibers such as polyethylene and polypropylene, and that the siloxane is contained in amounts within the scope of the present invention. The Examiner further contends that the spin finish of Evans applied to the fibers of Asanuma would result in a fiber/fiber friction falling within the claimed ranges.

However, the siloxanes utilized by Evans are siloxanes having amine and polyol functionalities. Evans teaches that compositions containing the specific siloxanes provide hydrophilicity and resistance to yellowing when applied to fibers. In other words, the functionalized siloxanes do not need to be emulsified in aqueous solution when applied to fibers.

In contrast, the polysiloxanes used in the present invention are applied as an aqueous emulsion of polysiloxanes. This would imply that in terms of hydrophobic/hydrophilic properties, the composition of Evans is very different from the spin finish composition applied to the fibers according the present invention.

One having ordinary skill in the art would thus not be motivated by the combination of Asanuma and Evans to produce the present invention as

embodied in claim 1. A *prima facie* case of obviousness has not been made.

Claims depending on claim 1 are patentable for at least the above reasons.

These rejections are overcome and withdrawal thereof is respectfully requested.

Information Disclosure Statement

The Examiner is thanked for considering the Information Disclosure Statement filed December 16, 2003 and for making the initialed PTO-1449 form of record in the application in the Office Action mailed September 8, 2005. The Examiner is also thanked for considering the Information Disclosure Statement filed February 27, 2004 and for making the initialed PTO-1449 form of record in the application in the Office Action mailed October 5, 2004.

Prior Art

The prior art cited but not utilized by the Examiner indicates the status of the conventional art that the invention supercedes. Additional remarks are accordingly not necessary.

CONCLUSION

In view of the above, Applicants submit that the application is now in condition for allowance. The Examiner is accordingly respectfully requested to issue a Notice of Allowability.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: December 8, 2005

R. Goozner

Respectfully submitted,

By 

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